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AN ISOTOPIC AND HISTORICAL STUDY OF DIET
AND MIGRATION DURING THE GREAT IRISH
POTATO FAMINE (1845-1852)

High-resolution carbon and nitrogen isotope profiling of
teeth to investigate migration and short-term dietary
change at the Union Workhouse, Kilkenny and Lukin
Street, London

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Abstract:

Historical evidence from contemporary documents established that Irish migrants to London during the Great Irish Famine (1845-1852) were likely to come from low socio-economic groups in south-west Ireland, and has characterised mid-19th-century health status and living conditions in both locations. Using samples from 119 individuals from the Catholic cemetery at Lukin Street, London (1843-1854) and 20 from the Union Workhouse Famine cemetery, Kilkenny, Ireland (1847-51), mean bone collagen isotope values were established for the well-documented Irish pre-Famine potato-based diet ($\delta^{15}\text{N}$ 10.6‰, $\delta^{13}\text{C}$ -19.1‰), and the diet of contemporaneous Londoners ($\delta^{15}\text{N}$ 12.6‰, $\delta^{13}\text{C}$ -19.1‰). The introduction of maize as a short-term Famine relief food was identified in three Kilkenny juveniles with bone collagen $\delta^{13}\text{C}$ above -17‰, and incremental dentine collagen demonstrating temporal changes in $\delta^{13}\text{C}$ consistent with dietary change from C_3 to C_4 plants. Bone collagen values for two Lukin Street individuals were consistent with high marine protein consumption. Techniques developed in this study to sample increments of dentine representing nine months or less of life have improved temporal resolution not only for migration events but also short-term dietary changes and physiological status during childhood. Combining epigraphic, osteological and archaeological evidence, individual “lifeways” have been constructed using isotope data and provide insights into the connection between health, diet and skeletal manifestations of deprivation during childhood and adolescence. New models are investigated for examining maternal and infant health using dentine collagen increments formed *in utero* and combining dentine and bone collagen values to explore the effects of nutritional stress on bone turnover.

Acknowledgements:

I have always been interested in the scientific search for truth: my first career, as a dentist and orthodontist, taught me to investigate how the human body grew and functioned, how diet and disease affected the tissues, and to engage with the work of improving health. My hobby, archaeology, allowed me to engage with humans in the past, their behaviour and experiences, using a scientific approach to the evidence they left behind. In both fields, I found that some of the “received wisdom” did not satisfy my curiosity, and the discovery of evidence-based practice and the Cochrane reviews of published studies allowed me to learn by questioning the status quo in dentistry.

The staff at the department of Archaeological Sciences at University of Bradford encouraged me to study, first at Masters and now at Doctoral level, the evidence behind the interpretations for the health and behaviour of our ancestors. The results in this study are, I believe, the fortunate combination of old professional and new scientific skills to produce a method for re-examining a small part of that evidence.

Many people have helped me to aspire to the level of study at which I find myself: my supervisor Dr Janet Montgomery, who I first met on a student visit to Bradford. From that day, she has been inspirational, supportive but also rigorous and testing as befits her considered scientific approach to her work. I can think of nothing better than being her colleague. My family: husband Ian who accepted my decision to follow a different career, and my three immensely talented children, Rachel, Jo and Jonny (who seem to be as proud of me as I am of them!).

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Grateful thanks to MOLA and the Catholic diocese of Westminster for granting permission to undertake the scientific analysis of individuals recovered from the Lukin Street site. The other site, Kilkenny Union workhouse Famine cemetery, was the subject of the PhD of Dr Jonny Geber, Queen’s University Belfast, and his generous help in getting access and permission to analyse the samples was pivotal: it was data from these which allowed comparison with the migrants in London, and also unlocked a number of unexpected findings. I would like to thank The Irish Antiquities Section of the National

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Finally, the completion of this thesis marks not an ending, but a beginning: I have made my hobby into my job, and look forward to investigating many more aspects of the health and development of people from the past, in my future.

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Appendix 2

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“Here and there; or, emigration a remedy” from Punch (1848)